

State/Industry Ambient Monitoring Network

Air Quality Report

3rd Quarter 2002

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North Dakota Department of Health

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SECTION ONE

DISCUSSION OF
MONITORING RESULTS

Sulfur Dioxide (SO₂)

There were no exceedances of the state or federal standards during the quarter. The maximum 1-hour concentration was 125 ppb on September 19 at Mandan - SPM; the maximum 3-hour concentration was 95 ppb on September 19 at Mandan - SPM; and, the maximum 24-hour concentration was 22 ppb on September 19 at Mandan - SPM . All sites achieved at least an 80% data recovery for the period.

Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 232 ppb on July 3 at Bear Paw - MGP #5.

Ozone (O₃)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 72 ppb on August 7 at Beulah - North. The 4th highest 8-hour concentration was 60 ppb on July 19 at TRNP - SU (Painted Canyon) and Beulah - North.

Nitrogen Dioxide (NO₂)

The maximum 1-hour concentration observed was 37 ppb on September 26 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated except Hannover.

Ammonia (NH₃)

The maximum 1-hour average was 48.4 ppb on July 2 at Beulah - North. An 80% data recovery was achieved for the period operated.

The data is used as part of the ambient data input used by the newer dispersion models.

Inhalable Continuous PM_{2.5} Particulates

The maximum 1-hour concentration was 145.4 µg/m³ on July 24 at Beulah - North. The maximum 24-hour concentration was 23.9 µg/m³ on July 24 at Beulah - North. All sites achieved at least an 80% data recovery for the period operated..

Inhalable FRM PM_{2.5} Particulates

The maximum 24-hour average concentration was 21.2 µg/m³ on July 19 at Fargo NW. All sites achieved at least an 80% data recovery for the period.

Inhalable PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 44.0 µg/m³ on July 1 at Fargo NW. An 80% data recovery was achieved for the period operated except TRNP - NU.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
Amerada Hess - Tioga #1	2002	JUL-SEP	2171	42 07/28/15	42 09/13/10	29 09/13/11	23 07/28/17	6 09/13	4 07/28	1.3			9.4
Amerada Hess - Tioga #3	2002	JUL-SEP	2154	89 09/18/16	70 09/20/04	50 09/18/17	36 07/31/20	12 08/03	11 09/18	2.2			15.6
Bear Paw - MGP #3	2002	JUL-SEP	2138	38 09/24/08	34 09/24/11	26 09/24/11	14 09/24/08	6 09/24	2 09/08	1.1			3.8
Bear Paw - MGP #5	2002	JUL-SEP	2182	50 07/03/14	33 08/06/09	17 07/03/14	16 08/06/11	4 07/03	4 08/06	1.3			11.2
Beulah - North	2002	JUL-SEP	2192	29 09/28/06	25 07/12/08	16 07/06/17	15 07/17/11	5 07/17	5 07/06	1.9			20.8
DGC #12	2002	JUL-SEP	2185	20 08/17/01	20 09/28/07	13 09/15/11	12 07/31/11	5 07/24	5 07/06	2.0			24.9
DGC #14	2002	JUL-SEP	2194	47 09/26/10	32 08/16/11	21 08/31/11	19 09/26/11	5 08/24	5 07/08	1.8			17.6
DGC #16	2002	JUL-SEP	2186	36 07/24/13	35 09/16/09	29 07/24/14	22 07/18/14	8 09/16	7 09/04	2.4			23.9
DGC #17	2002	JUL-SEP	2195	42 07/03/09	42 07/11/09	27 07/03/11	25 07/11/11	10 08/05	8 07/18	2.4			31.3
Dunn Center	2002	JUL-SEP	2195	11 07/17/10	9 07/03/09	7 08/22/05	6 07/17/11	3 07/06	2 07/17	1.1			6.8
Fargo NW	2002	JUL-SEP	2000	2 07/04/12	2 07/04/19	2 07/04/20	2 09/26/20	1 07/04	1 09/26	1.0			0.7
Hannover	2002	JUL-SEP	2190	77 07/24/16	67 07/30/08	49 07/24/14	47 07/24/17	14 07/24	10 07/30	2.0			21.3
Mandan - SPM	2002	JUL-SEP	2193	125 09/19/05	110 09/19/04	95 09/19/05	55 09/20/11	22 09/19	21 08/01	3.4			24.5
Mandan NW - SPM	2002	JUL-SEP	2194	76 08/27/10	71 07/04/18	47 08/27/11	39 08/29/23	14 07/04	14 08/05	3.7			33.2

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A 3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
TRNP - NU	2002	JUL-SEP	2190	4 09/28/09	3 07/03/16	2 09/28/11	2 07/03/17	1 08/04	1 07/03	1.0			1.7
TRNP - SU (Painted Canyon)	2002	JUL-SEP	2193	10 09/05/19	8 09/05/08	8 09/05/20	7 09/05/11	5 09/05	2 09/04	1.3			22.7
White Shield	2002	JUL-SEP	2188	25 08/16/10	23 08/29/10	13 09/04/17	12 08/16/11	3 09/04	3 09/28	1.4			13.7

The maximum 1-hour concentration is 125 ppb at Mandan - SPM on 09/19/05
 The maximum 3-hour concentration is 95 ppb at Mandan - SPM on 09/19/05
 the maximum 24-hour concentration is 22 ppb at Mandan - SPM on 09/19

* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	5 - M I N U T E			M A X I M A			# HOURS >600	% >MDV
				1ST DATE MM/DD/HH	2ND DATE MM/DD/HH	3RD DATE MM/DD/HH	1ST DATE MM/DD/HH	2ND DATE MM/DD/HH	3RD DATE MM/DD/HH		
Amerada Hess - Tioga #1	2002	JUL-SEP	2171	139	07/28/15	98	09/13/10	83	07/30/23	0	12.5
Amerada Hess - Tioga #3	2002	JUL-SEP	2154	153	09/18/16	146	09/14/08	116	09/23/03	0	26.9
Bear Paw - MGP #3	2002	JUL-SEP	2138	146	08/10/12	128	09/24/11	116	09/24/08	0	12.0
Bear Paw - MGP #5	2002	JUL-SEP	2182	232	07/03/14	144	08/06/16	138	08/06/09	0	25.1
Beulah - North	2002	JUL-SEP	2192	59	09/28/06	53	07/17/12	51	07/17/08	0	31.0
Dunn Center	2002	JUL-SEP	2195	21	07/08/08	17	07/08/09	14	07/17/10	0	12.3
Fargo NW	2002	JUL-SEP	2000	7	08/26/07	6	09/27/11	5	09/27/12	0	2.5
Hannover	2002	JUL-SEP	2190	137	07/18/09	123	07/30/07	103	07/30/08	0	34.7
Mandan - SPM	2002	JUL-SEP	2193	207	09/19/05	191	09/19/04	148	09/02/00	0	35.2
Mandan NW - SPM	2002	JUL-SEP	2194	164	08/25/09	145	07/14/07	128	07/14/09	0	44.8
TRNP - NU	2002	JUL-SEP	2190	7	08/03/00	6	09/28/09	4	07/02/13	0	3.7
TRNP - SU (Painted Canyon)	2002	JUL-SEP	2193	15	09/30/05	13	09/05/19	12	09/05/09	0	29.4

The maximum 5-minute concentration is 232 ppb at Bear Paw - MGP #5 on 07/03/14

* No Standard is currently in effect:

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A		8 - HOUR				1HR #>120	8HR #>80
				1 - HOUR 1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	4TH MM/DD/HH		
Beulah - North	2002	JUL-SEP	2194	72 08/07/13	70 08/07/12	60 07/03/08	60 07/19/08	60 07/18/07	60 07/19/09		
Dunn Center	2002	JUL-SEP	2198	70 07/04/15	68 07/04/16	59 07/04/10	56 07/04/11	56 07/04/09	56 07/04/12		
Fargo NW	2002	JUL-SEP	1999	67 09/01/01	67 09/01/14	62 09/01/08	55 09/01/09	55 09/01/07	55 09/01/10		
Hannover	2002	JUL-SEP	2190	66 08/07/14	65 08/07/13	59 08/07/10	57 08/07/09	57 08/07/08	57 08/07/11		
TRNP - NU	2002	JUL-SEP	2192	71 07/04/14	67 07/04/16	64 07/19/09	58 07/19/10	58 07/04/10	58 07/19/08		
TRNP - SU (Painted Canyon)	2002	JUL-SEP	2196	70 07/04/13	68 07/04/12	67 07/04/10	60 07/04/09	60 07/04/11	60 07/19/10		

The maximum 1-hour concentration is 72 ppb at Beulah - North on 08/07/13

The 4th highest 8-hour concentration is 60 ppb at TRNP - SU (Painted Canyon) on 07/19/10 and Beulah - North on 07/19/09

* The air quality standards for ozone are:

STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH		
Beulah - North	2002	JUL-SEP	2186	25 07/12/08	21 09/28/06	3.1	76.2
DGC #12	2002	JUL-SEP	2165	19 07/15/10	18 07/12/09	2.5	57.6
DGC #17	2002	JUL-SEP	2184	29 08/05/22	26 08/06/00	2.5	52.7
Dunn Center	2002	JUL-SEP	2190	12 08/22/04	11 08/22/02	1.8	43.9
Fargo NW	2002	JUL-SEP	1994	37 09/26/18	33 09/11/20	4.8	79.8
Hannover	2002	JUL-SEP	1494 ***	22 07/24/16	18 07/30/08	2.4	59.2
TRNP - NU	2002	JUL-SEP	2185	6 07/07/22	6 07/18/00	1.2	13.2

The maximum 1-hour concentration is 37 ppb at Fargo NW on 09/26/18

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

*** Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ammonia (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A					
				1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	4TH MM/DD/HH	5TH MM/DD/HH	6TH MM/DD/HH
Beulah - North	2002	JUL-SEP	2163	48.4 07/02/05	25.8 09/24/11	25.5 07/24/19	20.8 08/01/01	20.5 09/20/07	19.3 09/12/05

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{2.5} (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A		24 - HOUR				MEAN	1HR #>150	24HR #>65
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Beulah - North	2002	JUL-SEP	2199	145.4 07/24/10	85.3 07/24/09	23.9 07/24	17.8 08/07	15.6 07/18	15.0 07/16	7.3		
Fargo NW	2002	JUL-SEP	2006	35.6 07/02/20	30.4 08/31/09	21.3 08/31	20.4 07/16	17.4 07/19	16.0 07/15	6.4		

The maximum 1-hour concentration is 145.4 µg/m³ at Beulah - North on 07/24/10
The highest 24-hour concentration is 23.9 µg/m³ at Beulah - North on 07/24

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable FRM PM_{2.5} Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2002	JUL-SEP	16	2.7	10.6 07/19	10.5 09/05	10.0 08/06	6.4			100.0
Bismarck Residential	2002	JUL-SEP	28	2.9	15.5 07/16	15.5 08/30	14.5 07/19	6.9			100.0
Fargo NW	2002	JUL-SEP	31	2.2	21.2 07/19	21.0 07/16	20.2 08/30	8.5			100.0
TRNP - NU	2002	JUL-SEP	16	2.3	12.8 07/19	10.5 09/05	9.9 08/06	6.2			100.0
TRNP - SU (Painted Canyon)	2002	JUL-SEP	14	3.0	9.2 08/06	9.1 07/19	7.3 07/07	5.5			100.0

The maximum 24-hour concentration is 21.2 µg/m³ at Fargo NW on 07/19

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM₁₀ Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2002	JUL-SEP	16	11	41.0 09/05	29.0 07/19	29.0 08/24	21.6			100.0
Dragswolf	2002	JUL-SEP	15	3.1	18.9 09/17	17.3 07/19	13.8 08/24	9.2			86.7
Fargo NW	2002	JUL-SEP	30	5.0	44.0 07/01	43.0 07/16	35.0 09/08	21.6			100.0
TRNP - NU	2002	JUL-SEP	10 ***	7.0	30.0 09/05	26.0 09/17	19.0 07/31	14.8			100.0
White Shield	2002	JUL-SEP	16	3.0	16.6 09/17	15.8 08/24	15.2 09/05	10.4			93.8

The maximum 24-hour concentration is 44.0 µg/m³ at Fargo NW on 07/01

* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m³ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m³ expected annual arithmetic mean.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ ($\mu\text{g}/\text{m}^3$)

The * Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ ($\mu\text{g}/\text{m}^3$)

The * Identifies the Exceedances

NONE